

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

1-15. (canceled)

16. (currently amended) A process for making a sizing composition comprising the sequential steps of:

(a) emulsifying components consisting of

alkenylsuccinic anhydride, with

a first starch component, wherein the first starch component is an aqueous starch solution consisting of water and containing a starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and

optionally, a surfactant component consisting of a surfactant selected from the group consisting of anionic surfactants and nonionic surfactants

~~and thereby forming to form~~ an emulsion consisting of the alkenylsuccinic anhydride, ~~and the first starch component, and, optionally, the surfactant component; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation;~~ and

(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition;

wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties

to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.

17-34. (canceled)

35. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by oxidation.

36. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by acid modification.

37. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by heat treatment.

38. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by acetylation.

39. (previously presented) The method of claim 16, wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by hydroxyethylation.

40. (currently amended) ~~The method of claim 16,~~ A process for making a sizing composition comprising the sequential steps of:

(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion consisting of the alkenylsuccinic anhydride and the first starch component; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato

starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation; and wherein the first starch component contains a nonionic oxidized starch; and

(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition;

wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.

41. (previously presented) A process for making a sizing composition comprising the sequential steps of:

(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation; wherein said emulsifying alkenylsuccinic anhydride with a first starch component is conducted using an emulsification device characterized by an inlet temperature of about 120 to 150°F and an inlet pressure of about 10 psig; and

(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition;

wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.

42. (previously presented) A process for making a sizing composition comprising the sequential steps of:

(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof, and thereby forming an emulsion; wherein the first starch component contains starch consisting of the product of modifying a corn starch, potato starch, wheat starch, tapioca starch, or sorghum starch by a process selected from oxidation, acid modification, heat treatment, acetylation, and hydroxyethylation; wherein said emulsifying alkenylsuccinic anhydride with a first starch component is conducted using an emulsification device characterized by an outlet temperature of about 130 to 160°F and an outlet pressure of about 150 to about 160 psig; and

(b) combining the emulsion with a second starch component selected from the group consisting of non-ionic starches, ionic starches, and mixtures thereof, and thereby forming a sizing composition;

wherein the alkenylsuccinic anhydride and the starch in the emulsion and the second starch component are present at a starch:alkenylsuccinic anhydride weight ratio that is sufficiently high to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the-fibrous substrate; and wherein the starch component of the starch:alkenylsuccinic anhydride weight ratio is the total weight of the first starch component and the second starch component.

43. (previously presented) The method of claim 16, wherein the weight ratio of the first starch component starch to the alkenylsuccinic anhydride is about 0.2:1 to about 20:1.

44. (previously presented) The method of claim 16, wherein the weight ratio of the total weight of the first starch component starch and the second starch component starch to alkenylsuccinic anhydride is about 10:1 to about 200:1.

45. (currently amended) The method of claim 16, wherein the ~~first starch component is an aqueous starch solution~~ having has a starch solids content of about 1 to about 20 weight percent, based on the total weight of the aqueous starch solution.